

**City of Victorville Supplemental Environmental Project (SEP)**  
**Old Town Septic to Sewer Conversion Project**  
**August 29, 2019**

**Description of the SEP**

This project will connect properties in the Victorville Old Town area, which are utilizing septic systems, to the City sewer collection system. For the purposes of this SEP, the Old Town area is bounded by the Mojave River, Forrest Avenue, I-15 and Eleventh Street, an area of approximately 245 acres, with 441 developed properties. Please refer to Exhibit 1, a map of the Old Town area. There are currently approximately 82 developed properties in Old Town that are on septic system. The City is proposing to connect an estimated 33 properties to the sewer collection system or as many properties as funds will allow. The project is discussed in more detail below under the “Project Development” and “Project Implementation and Schedule” sections.

**Background**

GIS analysis has shown that there are 1,748 developed parcels in the City of Victorville that are within 200 feet of an existing sewer main, but not connected to the sewer collection system. These properties use a septic system on the same parcel to treat the sewer flow and are almost entirely single-family homes. The City Code Section 10.02.140 requires a property owner to connect to the City sewer collection system when a septic system fails, if the property is within 200 feet of an existing sewer. In Section 10.02.150, the City Code allows for a waiver of the requirement to connect to sewer if there is evidence of special circumstances, specifically, “practical difficulties” or “unreasonable hardships” if the granting of such a “variance will not be materially detrimental to public health, safety or welfare.” Please refer to Exhibit 2, which is a copy of the referenced City Code sections. Data from requests for a variance from the requirement to connect to sewer after failure of a septic system shows that the average estimated cost to connect to sewer was approximately \$27,000, including fees. From February of 2011 through August of 2016, there were 11 variances granted by City Council based on financial hardship. Please refer to Exhibit 3, which shows the summary of cost data on these variances.

**Problem Identification**

Water Quality Impacts

A conventional septic system, if properly designed and maintained, should remove nearly all suspended solids, bio-degradable organic compounds, and bacteria. However, according to EPA ecological research on environmental effects of septic tank

systems<sup>1</sup>, it is estimated that as many as one-half of all septic systems are not operating satisfactorily. The failure of a septic system has the potential of adverse impacts to groundwater. Historically, septic system failure has been linked to soil clogging, loss of infiltrative capacity, or simply exceeding the infiltrative capacity of the soil. When this type of system failure occurs, wastewater may seep to the surface and contaminants may be carried with the overland flow directly to a water body or a nearby well.

On the other hand, septic systems may fail to provide sufficient treatment due to the high permeability of the surrounding soil without showing any signs of seepage or overflow. Highly-permeable soil can be rapidly overloaded with organic and inorganic contaminants that move to the groundwater zone without being treated by the system. Multiple studies show that most of the known contaminants in septic tank effluent including suspended solids, biochemical oxygen demand (BOD), and fecal bacteria can be removed by soil filtration under proper conditions and sufficient filtration depths. However, other chemicals such as chlorides and nitrates are essentially unaffected by movement through most soils. The probability of contamination increases in wet conditions when the groundwater table rises. Higher water tables can rise into the aerobic zone below the soil absorption field and impede wastewater treatment.

Although groundwater contamination caused by septic systems may be due to different factors in different regions (i.e. density of the facilities in the area, geology, depth to water table, and climate), it has been continuously one of the highest ranked contributors of directly discharged wastewater to groundwater and one of the most frequently reported sources of contamination<sup>2</sup>. Contamination from septic tanks has been identified to cause diseases such as infectious hepatitis, typhoid fever, dysentery, and various gastrointestinal illnesses, and may be responsible for numerous subclinical cases of waterborne diseases that go unnoticed. As a main contributor to the nitrate concentration in groundwater, septic systems can be indirectly related to health concerns associated with high concentrations of nitrate in drinking water such as methemoglobinemia in human infants, increased risk of spontaneous abortion, bladder and ovarian cancer, and non-Hodgkin's Lymphoma<sup>3</sup>.

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<sup>1</sup> Environmental Protection Agency (EPA), 1997. "Environmental Effects of Septic Tank Systems", *Ecological Research Series*, August, 1997.

<sup>2</sup> Environmental Protection Agency (EPA), 1997. "Environmental Effects of Septic Tank Systems", *Ecological Research Series*, August, 1997.

<sup>3</sup> John A. Izbicki, Alan L. Flint, David R. O'Leary, Tracy Nishikawa, Peter Martin, Russell D. Johnson, Dennis A. Clark, 2015. "Storage and mobilization of natural and septic nitrate in thick unsaturated zones, California", *Journal of Hydrology*, Volume 524, May 2015, Pages 147-165, ISSN 0022-1694, <https://doi.org/10.1016/j.jhydrol.2015.02.005>.

### Cost to Connect to Sewer

As explained above, the cost to connect a property within 200 feet of an existing sewer can be substantial, and has averaged about \$27,000. The connection fee paid to the City is currently \$4,350. There are additional costs for the construction of the lateral connection in the public right of way, the plumbing connection on private property, the abandonment of the septic system and City permit fees. For property owners who are in financial hardship and not financially able to connect to the sewer collection system, the City has not been able to develop a grant program due to fund restrictions. The funds collected from the usage fee, paid by existing users, cannot pay for the cost of new connections to the system. The funds collected from the connection fee are restricted to increasing the capacity of the system.

### **Project Selection**

A septic to sewer conversion project was selected as a solution to the problem of the potential for adverse groundwater impacts from septic systems that can feasibly be connected to the sewer collection system. A project area was selected using the criteria of a small depth to groundwater and an economically disadvantaged area of the City. The Victorville Old Town area clearly meets both of these criteria.

### Depth to Groundwater

The depth to groundwater in Old Town varies by location and time. Groundwater data was accessed from the State Water Resources Control Board GeoTracker website at <https://geotracker.waterboards.ca.gov>. Three sites were accessed: (1) the former Nuway Dry Cleaners located at Eighth Street and C Street; (2) the former Chevron Bulk Plant located at D Street and Eighth Street; and (3) Golden West Tire, located at D Street and near First Street. Please refer to Exhibit 4, a table summarizing water table data. This exhibit includes excerpts of groundwater monitoring reports that were prepared for and submitted to the Lahontan Regional Water Quality Control Board.

The depth to groundwater below the ground surface at these locations varied from a minimum of 24.89 feet, 12.53 feet and 4.38 feet, respectively in the vicinity of the three sites. As would be expected the sites closer to the Mojave River had less depth to groundwater. A summary table from Site 3 shows a variance in the depth to ground water varying between 3.38 feet to 8.13 feet for the four monitoring wells over almost a nine-year period from November of 1999 to September of 2008.

Considering the low depths to groundwater in the area, nitrate contamination is likely even with less permeable soil types. Furthermore, in the areas closer to the Mojave River with relatively less depth to groundwater table, the treatment capacity of the septic systems may be limited due to the thin layer of soil absorption. This may lead to additional risks of contamination from salts, bacteria, etc. The contamination risk could become significantly higher during wet seasons.

## Economically Disadvantaged Community

The residents of the Old Town area, on average, have a lower income level than most of the other residents in Victorville. Property values and rents are also lower than compared to other parts of the City. Therefore, the likelihood that an Old Town resident or property owner would be able to fund a connection to the sewer system is less compared to other parts of the City. The Old Town area is within an SB 535 Disadvantaged Community designated by CalEPA and identified on the “CalEnviroScreen” as of April 2017. This designated area extends to Mojave Drive and Verde Street on the south border. The website reference for this designation can be found at: <https://oehha.ca.gov/calenviroscreen/sb535>. Please refer to Exhibit 5, a map showing the Disadvantaged Community area overlay on Old Town.

## **Supplemental Environmental Project List**

On December 15, 2016, this project was presented to the Mojave Water Agency (MWA) Technical Advisory Committee (TAC) to request addition to the list of projects for Supplemental Environmental Project funding with the Lahontan Regional Water Quality Control Board. The Committee approved the request and the project was added to the project list for the Mojave Integrated Regional Water Management Plan. Please refer to Exhibit 6, the MWA TAC agenda item. Project No. 2004 at the end of the list is the “Septic System Connection to Sewer Grant Program”, which is this project.

## **Project Development**

From February 20, 2017 through May 25, 2017 the City’s contractor, Hoffman Southwest Corp., also known as Propipe, cleaned and performed CCTV (closed circuit television) inspection of the gravity mains in the collection system in the Old Town area. From this inspection the location (distance from a referenced manhole) and orientation (side of the pipe) of lateral connections to each sewer main were determined. A map was prepared with current aerial imagery to identify which properties with buildings were not connected to sewer. It has been determined that approximately 82 developed parcels in the Old Town area are not connected to sewer (54 residential and 28 non-residential properties). Please refer to Exhibit 7, a map showing these properties.

The proposed project for environmental documentation purposes will include all 82 properties. However, the properties to be connected are prioritized based on their proximity to the Mojave River. In general, the closer the property is to the River, the lower the ground elevation and the less the depth to groundwater will be from the septic system.

A preliminary cost estimate was developed for a typical single property adjacent to an existing sewer. Sewer mains will not need to be extended for this project. Actual costs will vary depending on the conditions of a particular location including the depth of the sewer main, proximity of existing utilities and utility conflicts, difficulty of connecting to the main, the length and difficulty of installing the onsite piping and plumbing. Please refer to Exhibit 8 for preliminary cost estimates for the construction phase and the total project. It is estimated that 33 properties will be included in the project. Alternate bid

items will be included in the bid schedule so that properties can be added or deleted to scale the project cost to match the available offset to the ACL penalty amount. Please refer to Exhibit 9, a map of the properties to be included in the project and Exhibit 10 for a list of the properties to be included in the project.

### **Project Goals and Water Quality Benefits of the SEP**

The City's proposal for septic to sewer conversion meets a series of beneficial goals for the water resources in the area:

- Preserve local beneficial uses as it relates to water quality of water supplied by surface water and groundwater.
- Continue pursuing the goals for septic system reduction and sewer service expansion to promote water quality protection.
- Provide support and assistance to Disadvantaged Communities and help facilitate projects and programs that benefit those communities.
- Improve the water use in the region by increasing the available recycled water at the wastewater treatment plant and protecting water supply, groundwater quality, and physical infrastructure.
- Reduce the hauled waste program from septic systems cleanups.

Priority projects will be for a target area in Old Town that has a high water table (close to the Mojave River), is in proximity to known contaminants in the soil or groundwater, and has economically disadvantaged residents. These projects would reduce the infiltration of leachate from the septic systems to groundwater and decrease the probability of nitrate contamination. It would also protect the surface water resources during the wet weather events by eliminating the transportation of septic system leakage to water bodies. Wastewater from the projects would be added to the influent volume of the wastewater treatment plant that undergoes tertiary treatment. This would eventually increase the recycled water availability and water supply flexibility of the City.

### **Public Benefit of the SEP**

The primary public benefits of the SEP are twofold: protecting water quality by mitigating the risk of groundwater contamination from existing septic systems; and providing reliable sewer service to economically disadvantaged residents of the City. As explained above, the advantages of converting septic systems to sewer connections in areas with a high groundwater table is significant in protecting groundwater quality. The low depths to groundwater in the residential properties close to the Mojave River impose the highest risk of groundwater contamination and water quality degradation. The careful selection of the project area ensures that while the City is serving the economically disadvantaged community, it is addressing the most critical and high-risk systems and delivering the highest public benefit.

### **Key Personnel**

The designated Project Manager is Stephan Longoria, PE, Senior Civil Engineer, in the Engineering Division of the Public Works Department. Stephan will be responsible for

every aspect of the project, from start to completion. In addition to supervising several engineers, Stephan also supervises the City's Public Works Inspectors, who inspect all improvements in the public right of way.

Kevin Collins, the Building Official for the City, will be responsible for permit issuance and inspection of all improvements on private property and the abandonment of the existing septic systems.

### **Financing of the SEP**

The proposed financing of this SEP is from the City's sewer fund. The cost of this project is proposed to offset fifty percent of the penalty amount resulting from ACL Complaint No. R6V-2016-0042. The project's costs are proposed to be all inclusive, to include the following, and not necessarily be limited to: preparation of environmental documentation; design and preparation of plans, specifications and estimates; all construction in the public right of way such as sewer laterals, connections to sewer mains, and cleanouts; all construction on private property such as the onsite piping and plumbing and connection to the building; abandonment of the existing septic system; all permitting and inspection fees; City and VVWRA connection fees. The ongoing sewer usage charge to the property owner will be paid by the property owner.

### **Project Implementation and Schedule**

The major SEP tasks and schedule for the start and completion of those tasks is shown below. The CCTV investigation has been completed. The environmental documentation and approval process for the project is scheduled to start immediately after the SEP is approved by the Lahontan Regional Water Quality Control Board. It is anticipated that the work will be categorically exempt and the environmental documentation and clearance will use in-house resources. It will be necessary for each property owner to sign an agreement with the City to give the City's agents and contractor the right to enter their property to survey it and install the required improvements to connect to the sewer collection system. The agreement will state that after the improvements have been inspected by the City and have been completed to the satisfaction of the City and the property owner, the improvements will become the property of the property owner and maintained from that time forward by the property owner. It is anticipated that the preparation of the plans, specifications and estimates (PS&E) will be prepared by an engineering consultant. The PS&E will be the construction documents used for advertising for contractor bids. After the construction contract is awarded by the City, the contract will be executed, City permits for the work both in the public right of way and private property will be issued to the contractor, and submittals for the construction schedule, traffic control and materials will be reviewed and approved. After this the construction can start. The project will be closed out after testing, final inspections, resolution of change orders and claims and final payment to the contractor. After this, the City will approve a notice of completion for the project, which is recorded. Then the improvements in the public right of way will be accepted for maintenance by the City and, in accordance with the property owner agreement, the property owner will be required to maintain all improvements on private property. Shown below is an estimated SEP implementation schedule.

**Table: Supplemental Environmental Project Implementation Schedule**

Task	Duration (days)	Start	Finish
Environmental Documentation	35	04/01/20	05/06/20
Property Owner Authorization & Agreement	91	04/01/20	07/01/20
Plans, Specifications and Estimates	150	07/02/20	11/29/20
Advertise Construction	35	11/30/20	01/07/21
Award Contract	49	01/07/21	02/16/21
Execute Contract, Permits and Submittals	30	02/16/21	03/24/21
Construction	120	03/29/21	07/27/21
Close Out Construction & Notice of Completion	62	07/27/21	10/05/21
City & Property Owner Maintenance Acceptance	63	10/05/21	11/29/21

**Maintenance Plan Beyond the SEP-funded Period**

The maintenance of all improvements in the public right of way (which are either road or sewer easements) will be the ongoing responsibility of the City of Victorville Public Works Department. These improvements include the sewer mains, manholes, laterals and cleanouts. The maintenance of all improvements within private property will be the ongoing responsibility of the property owner. These improvements include onsite piping and plumbing, and abandoned septic system facilities.

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**Exhibits**

- Exhibit 1 – Map of Old Town Area
- Exhibit 2 – City Code Sections – Failure of Private Sewer Disposal System and Variances
- Exhibit 3 – Sewer Connection Variance Estimated Costs
- Exhibit 4 – Old Town Depth to Groundwater Elevations
- Exhibit 5 – Disadvantaged Community Area Map
- Exhibit 6 – MWA TAC Agenda Item
- Exhibit 7 – Map of Old Town Properties not Connected to Sewer
- Exhibit 8 – Preliminary Project Cost Estimate
- Exhibit 9 – Map of Properties to be included in Project
- Exhibit 10 – List of Properties to be included in Project